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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,230	07/02/2001	Tomoko Atagi	NAK1-BP28	9025

7590 07/03/2003  
Joseph W. Price  
PRICE, GESS & UBELL  
2100 S.E. Main St., Ste. 250  
Irvine, CA 92614

EXAMINER

TRAN, CHUC

ART UNIT PAPER NUMBER

2821

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/897,230

Applicant(s)

ATAGI, TOMOKO

Examiner

Chuc D Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11-13, 15-21, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23 is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-13, 15-21 and 24 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Remark*

1. The indicated allowability of claims 1-8 and 14-21 are withdrawn in view of the reference(s) to Watanabe et al (USP. 5,801,483). Rejections based on the cited reference(s) follow. Finality has been withdraw.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-7, 11-13, 15-21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al (USP. 5,801,483).

Regarding claim 1, Watanabe et al disclose a fluorescent lamp comprising:

- a fluorescent tube (1) that is composed of a glass tube having a phosphor layer (7) formed on an inner surface (Fig. 1) (Col. 3, Line 22) thereof and mercury and a rare gas enclosed therein (Col. 3, Line 1); and

- Electrodes (4) that cause an electrical discharge within the fluorescent tube (Col. 3, Line 1); wherein

- the glass tube is made of a glass material (Col. 2, Line 66) that contains an emissive element, the emissive element emitting (Col. 3, Line 32), when exposed to first ultraviolet light that is emitted due to mercury excitation (Col. 4, Line 18), second ultraviolet light that has a longer wavelength than the first ultraviolet light (Col. 4, Line 20).

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Regarding claim 2, Watanabe et al disclose that the emissive element emits visible light together with the second ultraviolet light, when exposed to the first ultraviolet light (Col. 4, Line 20).

Regarding claim 3, Watanabe et al disclose that an entire luminous flux emitted from the fluorescent lamp includes:

- a first luminous flux that is formed by visible light emitted from the phosphor layer when exposed to the first ultraviolet light (Col. 5, Line 50) (Table. I, Col. 6);
- a second luminous flux that is formed by visible light emitted from the emissive element when exposed to the first ultraviolet light (Col. 5, Line 59) (Table. I, Col. 6); and
- a third luminous flux that is formed by visible light emitted from the phosphor layer when exposed to the second ultraviolet light (Table. I, Col. 6); wherein
- the second luminous flux and the third luminous flux together constitute at least 2% of the entire luminous flux emitted from the fluorescent lamp (Coil. 5, Line 11).

Regarding claim 5, Watanabe et al disclose that a thickness of the phosphor layer is below 20  $\mu\text{m}$  (Col. 6, Line 35).

Regarding claim 6, Watanabe et al disclose a fluorescent lamp comprising:

- a fluorescent tube that is composed of a glass tube having a phosphor layer formed on an inner surface thereof and mercury and a rare gas enclosed therein; and
- electrodes (4) that cause an electrical discharge within the fluorescent tube (Col. 3, Line 1); wherein
- the glass tube is made of a glass material containing an oxide of at least one element selected from the group consisting of titanium, zirconium, vanadium, niobium,

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tantalum, molybdenum, tungsten, thallium, stannum, plumbum, bismuth, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium (Col. 3, Line 35).

Regarding claim 7, Watanabe et al disclose that the glass material contains 0.01wt% to 10 wt% of an oxide (Col. 4, Line 40) of at least one element selected from the group consisting of titanium, zirconium, vanadium, niobium, tantalum, molybdenum, tungsten, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium (Col. 3, Line 35).

Regarding claim 11, Watanabe et al disclose that wherein an entire luminous flux emitted from the fluorescent lamp includes:

- a first luminous flux that is formed by visible light emitted from the phosphor layer when exposed to the first ultraviolet light (Table. I, Col. 6);

- a second luminous flux that is formed by visible light emitted from the emissive element when exposed to the first ultraviolet light (Table. I, Col. 6); and

- a third luminous flux that is formed by visible light emitted from the phosphor layer when exposed to the second ultraviolet light (Table. I, Col. 6); wherein

- the second luminous flux and the third luminous flux together constitute at least 2% of the entire luminous flux emitted from the fluorescent lamp (Col. 5, Line 11).

Regarding claim 12, Watanabe et al disclose a fluorescent lamp comprising:

- a fluorescent tube having a protective layer formed on an inner surface thereof, a phosphor layer (21,22) formed on the protective layer (2) (Fig. 7), and mercury and a rare gas enclosed therein (Col. 3, Line 14); and

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- electrodes (4) that cause an electrical discharge within the fluorescent tube (Col. 3, Line 1); wherein

- the protective layer contains an oxide of at least one emissive element selected from the group consisting of titanium, zirconium, vanadium, niobium, tantalum, molybdenum, tungsten, thallium, stannum, plumbum, bismuth, praseodymium, neodymium, samarium, gadolinium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium (Col. 4, Line 11).

Regarding claim 13, Watanabe et al disclose that the protective layer contains 0.01wt% to 10wt% of an oxide (Col. 4, Line 40) of at least one element selected from the group consisting of titanium, zirconium, vanadium, niobium, tantalum, molybdenum, tungsten, praseodymium, neodymium, samarium, gadolinium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium (Col. 4, Line 11).

Regarding claim 15, Watanabe et al disclose a high intensity discharge lamp comprising:

- an arc tube in which an emissive material is enclosed, the emissive material emitting visible light and ultraviolet light when excited by an electric discharge (Col. 4, Line 15); and  
- an envelop whose one surface surrounding the arc tube is covered with a phosphor layer (Col. 7, Line 15) (Fig. 9); wherein

- the envelop is made of a glass material that contains an emissive element, the emissive element emitting, when exposed to first ultraviolet light that is emitted due to excitation of the emissive material by the electric discharge, second ultraviolet light that has a longer wavelength than the first ultraviolet light (Col. 3, Line 22).

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Regarding claim 16, Watanabe et al disclose that the emissive element emits visible light together with the second ultraviolet light when exposed to the first ultraviolet light (Col. 3, Line 22).

Regarding claim 17, Watanabe et al disclose that an entire luminous flux emitted from the high intensity discharge lamp includes:

- a first luminous flux that is formed by the visible light emitted due to the excitation of the emissive material by the electric discharge (Col. 3, Line 8);
- a second luminous flux that is formed by visible light emitted from the emissive element when exposed to the first ultraviolet light (Col. 3, Line 22); and
- a third luminous flux that is formed by visible light emitted from the phosphor layer when exposed to the second ultraviolet light (Col. 3, Line 25).

Regarding claim 18, Watanabe et al disclose a high intensity discharge lamp comprising:

- an arc tube in which an emissive material is enclosed, the emissive material emitting visible light and ultraviolet light when excited by an electric discharge (Col. 4, Line 15); and
- an envelop whose one surface surrounding the arc tube is covered with a phosphor layer (Col. 7, Line 15) (Fig. 9); wherein
- the envelop is made of a glass material that contains an oxide of at least one element selected from the group consisting of titanium, zirconium, vanadium, niobium, tantalum, molybdenum, tungsten, thallium, stannum, plumbum, bismuth, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium (Col. 3, Line 35).

Regarding claim 19, Watanabe et al disclose a high intensity discharge lamp comprising:



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- an arc tube in which an emissive material is enclosed, the emissive material emitting visible light and ultraviolet light when excited by an electric discharge (Col. 4, Line 15); and
- an envelop that is provided so as to envelop the arc tube (Col. 5, Line 43); wherein
- the envelop is made of a glass material that contains an emissive element, the emissive element emitting visible light, when exposed to ultraviolet light that is emitted due to excitation of the emissive material by the electric discharge (Col. 3, Line 22) (Col. 4, Line 15).

Regarding claim 20, Watanabe et al disclose that an entire luminous flux emitted from the high intensity discharge lamp includes:

- a first luminous flux that is formed by the visible light emitted due to the excitation of the emissive material by the electric discharge (Col. 3, Line 22); and
- a second luminous flux that is formed by visible light emitted from the emissive element when exposed to the ultraviolet light that is emitted due to the excitation of the emissive material by the electric discharge (Col. 3, Line 25).

Regarding claim 21, Watanabe et al disclose a high intensity discharge lamp comprising:

- an arc tube in which an emissive material is enclosed, the emissive material emitting visible light and ultraviolet light when excited by an electric discharge (Col. 4, Line 15); and
- an envelop that is provided so as to envelop the arc tube (Col. 5, Line 43); wherein
- the envelop is made of a glass material that contains an oxide of at least one element selected from the group consisting of titanium, zirconium, vanadium, niobium, tantalum, molybdenum, tungsten, thallium, stannum, plumbum, bismuth, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium (Col. 3, Line 35).

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Regarding claim 24, Watanabe et al disclose that an entire luminous flux emitted from the fluorescent lamp includes:

- a first luminous flux that is formed by visible light emitted from the phosphor layer when exposed to ultraviolet light that is emitted due to mercury excitation (Col. 3, Line 22);
- a second luminous flux that is formed by visible light emitted from an emissive element contained in the protective layer when exposed to ultraviolet light that is emitted due to mercury excitation (Col. 3, Line 23); and
- a third luminous flux that is formed by visible light emitted from the phosphor layer when exposed to ultraviolet light that is emitted from the emissive element when exposed to ultraviolet light that is emitted due to mercury excitation (Col. 3, Line 25); and wherein
- the second luminous flux and the third luminous flux together constitute at least 2% of the entire luminous flux emitted from the fluorescent lamp (Col. 5, Line 11).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4, are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al.

Regarding claim 4 Watanabe differs from it in that a thickness of the glass tube is 0.62mm or less. However, glass tubes with the thickness of 0.62mm are used as arc tubes for conventional general fluorescent lamps. Thus, it would have been obvious to anyone of ordinary

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skill in the art to choose any of the above conventional design for forming Watanabe et al's structure in view of its convenience.

*Allowable Subject Matter*

6. Claim 23 is allowed.

7. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to appreciate the advantage offered by fluorescent lamp and high intensity discharge lamp with improved luminous efficiency with the following distinctive features such as set by the independent claim. In particular, the art of record fails to teach or fairly suggest constructing the protective layer contains 0.01wt% to 0.5wt% of an oxide of at least one element selected from the group consisting thallium, stannum, plumbum, and bismuth posses all of the distinctive features such as defined by independent claim 23 for decreasing the electric power consumption and providing larger luminous flux.

8. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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***Inquiry***

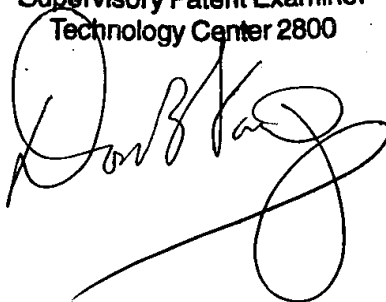
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuc D Tran whose telephone number is (703)306-5984. The examiner can normally be reached on M-F Flex hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (703)308-4856. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

TDC  
June 26, 2003

**Don Wong**  
**Supervisory Patent Examiner**  
**Technology Center 2800**

A handwritten signature in black ink, appearing to read 'Don Wong', is written over the printed name and title. The signature is stylized with a large loop at the end.